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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,328	12/05/2003	Joseph C. Deaton	87218AEK	1145

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EXAMINER

GARRETT, DAWN L

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/729,328

Applicant(s)

DEATON ET AL.

Examiner

Dawn Garrett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 10,19 and 22-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9,11-18,20,21 and 26-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1-30-04;4-11-05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is responsive to applicant's reply to the election of species requirement received November 7, 2005. Applicant elected species 1a (page 10-Iridium piq), 8b (page 26-anthracene) and 5c (page 19-styryl amine), as set forth in Device Example 5. For Formula I, applicant has selected $L_1 = L_2 =$ the third ligand; $V_1 - V_6 = H$; Ar = atoms to complete a phenyl ring. Claims "1-9, 11-18-21, 26-28, and 30-33" read on this election according to applicant. The examiner does not believe claim 19 drawn to a perylene reads on the elected species. Also, it appears that claim 29 should be included as the species has a biphenyl group at the "W₉" position. Claims 10, 19, and 22-25 are withdrawn as non-elected at this time.

Claim Objections

2. Claim 29 is objected to because of the following informalities: It appears "groups" should be changed to "group". Appropriate correction is required.

Claim Rejections - 35 USC § 103

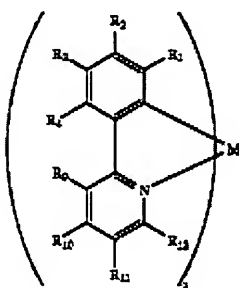
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9, 11-18, 20-21, and 26-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Andrade et al. (US 2002/0197511) in view of Chen et al. (US 2004/0247937), Hosokawa et al. (US 5,121,029) and Kwong et al. (US 2004/0241495). D'Andrade et al. discloses an OLEDs comprising an emissive region wherein the emissive region comprises a host material, and a plurality of emissive dopants, wherein the emissive

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region is comprised of a plurality of bands and each emissive dopant is doped into a separate band within the emissive region, and wherein at least one of the emissive dopants emits light by phosphorescence (see abstract). D'Andrade et al. teaches the region maybe comprised of multiple emitting layers (see par. 59). Although D'Andrade et al. does not appear to teach the specific phosphorescent compound Ir(piq) species currently under consideration, D'Andrade et al. generally teaches a phosphorescent dopant is desired for at least one of the emissive dopants (see abstract and par. 36). Kwong et al. teaches in analogous art the following compound formula as a phosphorescent emitting substance for an OLED (see page 2):



VII

[0011] M is a metal atom;

[0012] each $R^1, R^2, R^3, R^4, R^5, R^{10}, R^{11},$ and R^{12} is, independently, H, F, Cl, Br, I, R, OR, $N(R)_2$, SR, $C(O)R$, $C(O)OR$, $C(O)N(R)_2$, CN, NO_2 , SO_2 , SOR , SO_2R , SO_2R' ; and additionally, or alternatively, any one or more of R^1 and R^2 , or R^2 and R^3 , or R^3 and R^4 , or R^5 and R^{10} , or R^{10} and R^{11} , or R^{11} and R^{12} , together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein said cyclic group is optionally substituted by one or more substituents X_i ;

[0013] each R is, independently, H, C_1-C_{20} alkyl, C_1-C_{20} alkenyl, C_3-C_{20} alkynyl, C_1-C_{20} heteroalkyl, C_1-C_{20} aryl, C_3-C_{20} heteroaryl, aralkyl; wherein R is optionally substituted by one or more substituents X_i ;

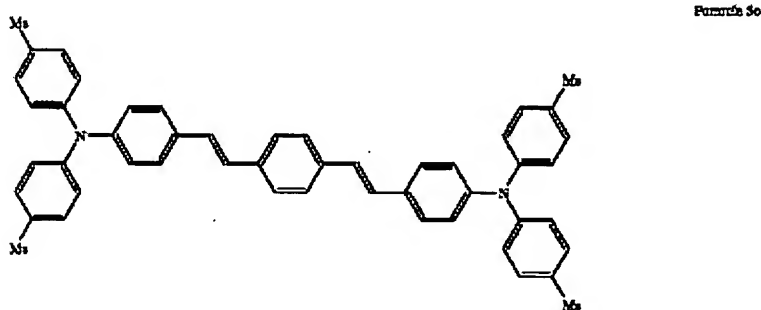
[0014] each X_i is, independently, H, F, Cl, Br, I, R', O, R' , $N(R')_2$, SR', $C(O)R'$, $C(O)OR'$, $C(O)N(R')_2$, CN, NO_2 , SO_2 , SOR' , SO_2R' , or SO_2R'' ;

[0015] each R' is, independently, H, C_1-C_{20} alkyl, C_1-C_{20} perhaloalkyl, C_3-C_{20} alkenyl, C_3-C_{20} alkynyl, C_1-C_{20} heteroalkyl, C_1-C_{20} aryl, or C_3-C_{20} heteroaryl; and

[0016] wherein at least one of $R^1, R^2, R^3, R^4, R^5, R^{10}, R^{11},$ and R^{12} is not H.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the iridium phosphorescent compound taught by Kwong et al. as a phosphorescent compound for the D'Andrade et al. device, because D'Andrade et al. teaches an emitting phosphorescent dopant is desirable for one of the light emitting layers. D'Andrade et al. further teaches an emissive layer with a fluorescent dopant and a host (see par. 41). Chen et al. teaches it is known in the art to form an emissive layer comprising TBADN (the anthracene species under consideration presently) doped with a luminescent fluorescent compound (see page 13, par. 133) and Chen et al. teaches that the condensed polycyclic compounds may be used in a major amount in the emissive layer (see par. 133 and Table 1-1). It would have been obvious to one of ordinary skill in the art to have selected TBADN as a host material for an emissive layer of the D'Andrade et al. device, because D'Andrade et al. teaches doped emissive layers and one would expect the emissive layer using TBADN taught by Chen et al. to be similarly useful in the D'Andrade et al. device. D'Andrade et al. fails to teach the following specific styryl fluorescent compound species currently under consideration, but does teach a fluorescent dopant is desired:



Hosokawa et al. teaches in analogous art the above formula as a light emitting material (see col. 33-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the above styryl compound as the fluorescent dopant for a D'Andrade et al. light

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emission layer comprising a fluorescent compound, because Hosokawa et al. teaches the compound is light emitting and one would expect the compound to be similarly useful as a light emitting compound in the D'Andrade et al. device.

With regard to claims 2 and 11-18 D'Andrade et al. teaches the emissive region can be tuned with dopants to produce any color of light including white light (see par. 40).

With regard to claim 30, D'Andrade et al. teaches doping levels between 6% and 9% (see par. 79).

With regard to claims 31 and 32, D'Andrade et al. discloses display panels and light sources as applications for the OLEDs (see par. 2).

Conclusion

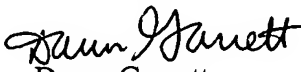
5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached at (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Dawn Garrett
Primary Examiner
Art Unit 1774

D.G.
January 19, 2006